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Board Diving Regulations in Public Swimming Pools and Risk of Injury

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Public session access to diving boards is one of the stepping stones for those wishing to develop their skills in the sport of diving. The extent to which certain dive forms are considered risky (forward/backward/rotations) and therefore not permitted is a matter for local pool managers. In Study 1, 20 public pools with diving facilities responded to a U.K. survey concerning their diving regulation policy and related injury incidence in the previous year. More restrictive regulation of dive forms was not associated with a decrease in injuries ($r_s[42] = -0.20$, $p = 0.93$). In Study 2, diving risk perception and attitudes towards regulation were compared between experienced club divers ($N = 22$) and nondivers ($N = 22$). Risk was perceived to be lower for those with experience, and these people favored less regulation. The findings are interpreted in terms of a risk thermostat model, where for complex physical performance activities such as diving, individuals may exercise caution in proportion to their ability and previous experience of success and failure related to the activity. Though intuitively appealing, restrictive regulation of public pool diving may be ineffective in practice because risk is not simplistically associated with dive forms, and divers are able to respond flexibly to risk by exercising caution where appropriate.

KEY WORDS: Diving; regulation; risk perception; risk thermostat

1. INTRODUCTION

The Great British Diving Federation (GBDF) lists 98 swimming pools in the United Kingdom that have diving facilities that the general public have access to. Although this is a minority of the range of public pool types in England,[1] these facilities undoubtedly represent an attraction to members of the public. Drawing upon data from Sport England[2] and the GBDF,[3] it is estimated that approximately 132,000 people may make regular use of pools with diving facilities, and 9,400 people attend organized diving clubs in England. This will include people of all ages, but as an activity diving is especially popular with children.[4] It is a physically intensive sport that mixes swimming with gymnastics. The aerobic advantages of swimming have been well documented, and include improving and maintaining cardiovascular and cardiorespiratory fitness.[5–7] The health advantages of gymnastics are somewhat different, but no less present, and concern the effect of intensive mechanical loads on the body, which help with bone development and musculoskeletal health generally.[8,9] It is also important not to overlook less obvious benefits. For example, the chance to use diving boards likely attracts the young to swimming pools, and incidentally aids the development of strong swimming skills, which is important in reducing drowning incidents beyond these settings.[10] Similarly, diving provides the chance, especially for the young, to learn to face and deal with real risks in a supportive setting. It is

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important to recognize that part of the attraction of exciting recreational activities like diving, or adventure sports more generally, may be that they provide valuable chances to acquire mastery over that which is feared, and that which could be dangerous.[11]

There are some risks associated with diving, as there are with all sport activities. For example, there is a very small risk of incidental adverse health effects from water chlorination and water-borne contaminants found in public swimming pools.[12,13] It is also possible to sustain injury while performing dives, usually outside public pools and diving into shallow water, though this tends to be quite rare, with reported injury rates of 8.4 per 100,000 U.S. residents each year.[14–18] Indeed, as shown later, the authors of the report presented here found the mean number of injury incidents in 20 U.K. pools in the previous 12 months was 0.63 per 100,000 visitors. In line with other sports, diving carries some risk, yet it is also a unique and exciting activity that can provide a range of benefits in terms of health and personal development.

1.1. Regulation of Diving Activities in Public Pool Sessions

Within the United Kingdom the Health and Safety Executive provide, advisory guidance (HSG179) on the management of swimming pools.[19] This offers rather little advice on the matter of safety during dive flight, merely suggesting that board access to the inexperienced be limited (section 7.3), and signage for board usage be clear (7.4). What exactly amounts to how equipment should be used or what constitutes inexperience is left to the discretion of pool managers under their pool safety operating procedure (PSOP) and normal operating plan (NOP), and neither the GBDF or the FINA handbook on diving[20] offer advice at this level. So the NOP may or may not specify what type of maneuver or position is allowed during dive flight in a normal public session, and in practice such matters fall to the discretion and latitude of the attendant life guard or pool manager. This may have led to some strange and restrictive conventions. For example, in the survey presented here some pools only allow jumps from certain heights, while in another these were uniquely forbidden. Some pools forbid spring fulcrum adjustment, leaving divers unable to set the board for their weight, while others do not. Of course, in each case safety will be the stated priority of pool managers, but if regulation is ambiguous, one might ask what basis is there for believing one dive form is more or less safe than another. What is clearly missing in the literature is any empirical *posteriori* evidence linking what is permissible in terms of board use and risk of injury so that pool managers may make informed decisions regarding the relative benefits (full public engagement in a challenging, healthy and exciting sport) versus what may be minimal risks of physical injury.

1.2. Risk Perception and Dive Selection

When deciding how to use the board during a public session a diver must choose between fear of injury or perhaps looking foolish and the various rewards of performing a successful dive,[21,22] which may include both a private sense of mastery and achieving acclaim from onlookers and peers for courage and ability.[23–25] The capacity to weigh this choice effectively may vary with age,[26,27] and by individual disposition towards sensation seeking.[28–32] However, it seems unlikely that "cold" injury prevalence data would be available and weighed analytically according to rules of logic in this process, but rather a fast and frugal experienced-based system would be applied where feelings about past performance affect current estimates of danger and the willingness to attempt new dive forms that fall within an acceptable zone of risk-benefit trade off.[33–35] For example, the complete novice may be influenced by cultivation effects more so than the experienced, with popular cultural transmissions such as ITV's prime time *Splash* show providing memorable images for assessing thrill and risk in a novel setting.[36–38] On the other hand, those with some experience to draw upon may have a pool of imagery that is tagged with affective associations. In line with Paul Slovic's and colleagues' work on the affective heuristic,[34,35] one might imagine that divers have available in mind a library of judgment-relevant past mistakes and successes concerning any future dive attempt, and the corresponding emotion associated with each. In this model, the diver will perceive risk as high where salient imagery is negatively affect tagged, and low where it is not. Where past salient experiences are positively tagged (i.e., they have performed dives successfully), then this reduces the perception of risk. This is consistent with other work showing that the perceived ability to perform an action—high self-efficacy—mediates state anxiety generally,[39] and specifically within noncontact acrobatic sports.[40] In essence, with some experience to

draw upon it seems reasonable to suppose that divers would fear some actions and not others, and that this guides their risk-benefit assessment and future dive attempts.[34,41]

The practical implication that follows the forgoing is that novice divers are unlikely to see themselves as able to achieve a 104C (two somersaults tucked), before a jump, then half rotation, then full somersault, and so on. It is not just that the physical strength and motor skills may not be in place, there is just no basis in past experience for such an expectation. Where there is little or no past experience of success to fall back upon, even a casual novice diver will likely see himself or herself as able to manage only that which the diver has already achieved, or a little beyond this.[42] This begs the question, how do people develop skills in this area? Obviously, intrinsic motivation, training needs, and the anticipated rewards of achieving new dives with greater difficulty will be drivers that counterbalance perceived risk. So new dives may be attempted that allow skill progression, but it is unlikely these will be selected at random. Rather, that which is new may follow some estimation of what is possible based on relevant past experience, within the limits of an acceptable level of risk and set against the anticipated reward. Further, within these limits divers can exercise some control over risk. While a 104c will always require two complete somersaults to perform, the height of the board, power of its deflection, and a number of other parameters can be tackled more cautiously in early attempts. Both across dive forms and within them, it would not be unreasonable for divers to compensate for variations in perceived levels of risk as outlined in risk compensation theory.[43–46] An athlete may adjust or compensate his or her own behavior according to the risk as the athlete perceives it. In the case of divers, this may affect which specific dive is attempted and the level of caution during its execution.[47] In support of this possibility, Burdon[4] prospectively followed 46 club divers for a period of six months and found no significant difference in self-reported injuries by either squad level (ability) or training mode. In addition, Day *et al.*[14] found that those presenting at emergency rooms with dive-related injuries more often reported having performed simple forward facing headfirst dives leading up to this, rather than more complex launches and flight positions (e.g., backward/handstand launch and rotations). Given the sheer range of different dives and methods of execution, it may be that where there is freedom so to do, individuals exercise their own precautions in the face of perceived risk by varying their behavior.[48] Factors such as what dive to select and how cautiously it is attempted may be adjusted in order that actors remain within their acceptable level of risk-benefit trade off. This means two dives that differ in technical difficulty may be equally risky, given the spectrum of abilities, sensation-seeking needs, and risk adjustments likely to be found in those attending general public diving sessions, which renders the generation of proscriptive regulations for the dive flight stage difficult. Therefore, the formal regulation of specific dive forms in public pools may fail to capture the complexity of a diver's response to risk. Because of this, such policies may be less effective than imagined at reducing injury and present a somewhat unbalanced and untested response to a perceived risk.[49] An important consequence of this is that such regulation may inhibit development and proper experimentation with risk by the young in one of the few environments where this essential process may be overseen and supported by others.[50–52]

1.3. The Current Study

Two key ideas are drawn together in this introduction. It is unclear what consistent and evidence-based guidance is extant in the United Kingdom with respect to the sort of dives that ought to be permitted when the general public use diving facilities. And though tempting, it is far from certain that apparent dive difficulty alone provides a sensible means of assessing risk. Demonstrating safety NOPs and reducing perceived liability in the case of local injury may be a priority for pool managers,[18] but this may unnecessarily frustrate pool users from progressing in their abilities and obtaining a sense of achievement or meeting sensation-seeking goals. Further, violation of regulation has consequences for patrons. It is likely that some patrons will err, and experience embarrassing admonishments or perhaps pool bans. This may reduce sport participation, something that ought to be encouraged, particularly in the young.[53] Indeed, wider social utilities such as helping children to be strong swimmers as a byproduct of diving may not have been considered at all when drawing up the most restrictive practices (in some cases being permitted to do no more than jump off a low board in a pool with excellent facilities). Regulation can have benefits, but it almost always has costs too. Following this, the studies presented here will look at two distinct but related questions. Study 1 will use a survey method to test whether there is in fact any correlation

between the harshness of regulation for public diving in pools and risk of injury to patrons in the preceding year. Study 2 will examine the relationship between experience of diving, risk perception, and regulation preference by testing whether those who dive regularly differ from others in their preference for regulation and their perception of risk when faced with diving-related imagery.

2. STUDY 1

2.1. Method

2.1.1. Participants

Ninety-eight managers of swimming pools with diving facilities as listed on the GBDF website were contacted and invited to take part in a survey concerning regulation of public diving sessions. Within this frame 20 pool managers agreed to take part.

2.1.2. Design

Study 1 employed an analytical survey using a correlational design. The independent variable was the severity of regulation in place during public diving sessions, and the dependent variable was the number of recorded accidents involving diving apparatus in the previous 12 months for which figures were available, which could be adjusted for the number of hours the pool made the boards available and visitors it received per year. The aim of the study was to investigate if there is any link between the harshness of regulation and the number of accidents occurring during public diving sessions.

2.1.3. Materials and Procedure

A standard letter was posted to the manager of each pool. This began with a description of the study, and then presented four questions on the following: What number of people visit the pool in each year, how many hours were the diving facilities made available to the public (not clubs) in an average week, how many recorded incidents involving injury to members of the public during public sessions and related to activities on the diving boards had occurred in the last full year for which records were available, and for how many hours in an average week was the pool open to the public. These data were used to estimate public exposure to risk, with which raw injury rates could be adjusted. Critically, the survey letter then asked about regulations during public dive sessions, and what was generally permitted as a dive form. This question was presented as follows: "Under your pool policy, please circle which of the following activities would normally be permitted during public diving sessions on the boards (if you have no specific policy on this please select n/a)." The following dives were listed: feet entry jumps, head first dives; somersaults (rotations); twists (turning sideways); and backward facing. A score was calculated as the sum of permitted dive forms, which was taken as liberal regulation towards five and becoming progressively harsher towards zero (i.e., a higher value indicated more types of dive were permitted, hence these pools had less restrictive policies). Once the survey was complete, managers were thanked and returned answers in the stamped addressed envelope provided.

Table I. Descriptive Statistics for Key Diving Measures Across the 20 Responding Pools

Measure	Mean	*SD*
Visitors to the pool per year	228,905	203,791
Hours per week diving boards open to public*	18.65	24.59
Diving-facility-related accidents in past year*	1.45	1.70
Total hours the pool is open to the public per week	77.27	9.21
Number of dive forms permitted (out of 5)	2.40	1.72
Number of accidents per 100,000 pool visitors	0.63	n/a

*18 pools.

2.2. Results

The descriptive statistics for key measures using the sample of pools that responded are presented in Table I. These values represent mean averages across pools in the sample. The degree of regulation severity is indicated by the number of dive forms permitted; this had a mean value of 2.40 ($SD = 1.72$), which suggests some variability in regulation policy across pools. The mean number of accidents reported in the previous year was 1.45, which translated to 0.63 accidents per 100,000 visitors. In order to test whether accidents in the past year was associated with the number of dive forms permitted, a correlational analysis of these and three further variables that might plausibly be related to reported accidents was undertaken using Spearman Rho (visitors per year, hours the

Table II. The Correlations Matrix of the Main Survey Measures (Spearman Rho)

	1.	2.	3.	4.	5.
1. Visitors per year	1				
2. Hours pool open to public	0.23	1			
3. Hours diving boards open	0.07	0.15	1		
4. Nos. of dive forms permitted	0.22	0.47*	0.65**	1	
5. Accidents in the past year	–0.13	0.28	–0.25	–0.02	1

*$p<0.05$; **$p<0.01$.

pool is open to the public, and the hours the diving boards are open). The results of this are presented in Table II. As can be seen from this table, none of the key variables measured, including the number of dive forms permitted (i.e., regulation severity), correlated with accidents in the previous year. The only reliable correlations found were between the number of dive forms permitted (regulation severity) and both the hours the pool was open ($r_s = 0.47$, $p = 0.04$) and the hours the diving boards were open to the public within these times ($r_s = 0.65$, $p = 0.002$).

2.3. Discussion

It does not appear to matter how many dive forms are regulated or not during public sessions in terms of the injury incidence in the previous year. Permitting only a limited number of dive forms does not appear to be associated with fewer accidents. However, the analysis has found that greater access to boards during opening times (hours open) and longer pool opening times were both associated with more liberal regulation of dive forms. It is hard to explain this from this data alone; it may be that in some pools there is an attempt to encourage use of diving facilities, which includes allowing their maximum reasonable use by members of the public and hence more liberal regulation. In tandem with this, it may be that with greater use of boards, objections to restrictive policy are encountered more often. The relationship between board access and usage policy may deserve some attention in its own right, but for the purposes here it is clear that if usage policy is designed to reduce accidents, it matters not whether only the simplest dive form is permitted (a forward facing jump) or five different types including back dives during public diving sessions.

3. STUDY 2

3.1. Method

3.1.1. Participants

Twenty-two experienced (diving in months $M = 19.29$, $SD = 59$) club-level masters platform and spring board divers were recruited through local club coaches (age $M = 26.54$ years, $SD = 7.44$). There were nine female and 13 male divers. This group was compared with 22 people purposefully selected from undergraduates with no diving experience (age 23.18 years, $SD = 10.09$). There were 14 female and eight males in this group. There was no significant difference across diver and nondivers in either age ($t[42] = 1.26$, $p = 0.22$) or gender frequency by groups ($X^2[1, N = 44] = 2.28$, $p = 0.13$).

3.1.2. Design

A between-subjects 2 (diver/nondiver) × 2 (dive risk image/neutral image) factorial design was employed. The main dependent measures were a 10-item form of the Weber, Blais, and Betz [54] risk perception scale, three items from the Deroche *et al.* [41] sport-specific risk scale that were modified to apply to diving, and the severity of regulation scale as used in Study 1. The aim of the study was to examine the relationship between diving experience, risk perception, and preference for regulation of diving activity in pools. In line with the model presented in Fig. 1, it is expected that experience will affect risk appraisal such that divers will perceive significantly less risk in the sport than others, and will have a lower preference for regulation. All participants are expected to rate activities as more risky and prefer harsher regulation if presented with dive-risk-related imagery (a picture taken from the top of a 10-m diving platform), compared with neutral imagery (a tennis court). However, this effect is expected to be strongest for the nondiver group.

3.1.3. Materials

The 10 items from the Weber *et al.* [54] risk perception recreation subscale (alpha = 0.81) ask how you would feel participating in certain activities with statements such as: *"Exploring an unknown city or section of town,"* which are rated on a five-point scale from "extremely safe," with a midpoint of "not sure,"

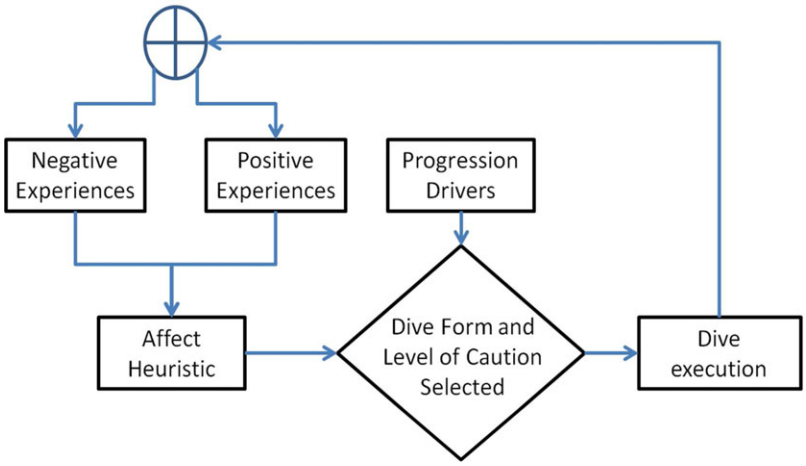

Fig. 1. Model showing the relationship between previous experience and current dive selection. The selected dive and the caution with which it is executed are related to the feeling it engenders based upon past relevant experiences. A diver may feel dread or confidence in respect of a given dive, but will also be motivated to progress, so experimentation with new dives is possible in a zone of acceptable risk, allowing some adjustment (compensation) in terms of how cautiously each new dive is attempted. How such dives are executed in practice will recursively feed into future experience and dive selection.

through to "extremely risky." Three items from the Deroche *et al.* (standardized alpha = 0.85) sport-specific scale were also included but adapted to mention diving (instead of judo). These were as follows: "*What do you believe is the likelihood that you will get an injury while practicing diving*?"; "*How likely do you feel it is that you could get an injury while practicing diving*?"; and "*What do you believe is the chance that you will get an injury while practicing diving in the next year in terms of a percentage*?" Participants were asked to indicate how likely they perceived the first two situations on a scale from one to five, and to indicate a percentage on the final question. Lastly, participants were asked the same regulation questions that had been asked of managers in Study 1. Irrespective of experience, all participants were shown one of two types of image before completing the measures. One image showed the view from a 10-m diving board, and one of a plain tennis court (the neutral condition). These were chosen because although both contained a sport context and similar proportions, only the diving scene gave a sense of height and risk from a diver's perspective (Fig. 2).

3.1.4. Procedure

The participant divers were approached at the end of training at a club session, while nondivers were invited to take part at a university campus. All participants were initially given information about the study, and if they agreed to take part they were shown one of the two images and asked to describe what they saw and write this down in two sentences (to ensure focus upon the image). The picture was then removed from sight and the participant was asked to complete the questionnaire, and thanked on its completion.

3.2. Results

Initial examination of the risk perception and sport, specific scales suggested there was little benefit in treating each scale separately as the combined scales yielded a standardized alpha of 0.703, whereas each separately was 0.675 and 0.712, respectively. Following this, descriptive statistics are presented for just two measures in Table III, the total score for risk perception including the sport-specific questions and regulation preference scores.

A two-way between-groups multivariate analysis of variance (MANOVA) was carried out to investigate the effects of diving experience and diving-related imagery on participants' risk perception scores and preferences for regulation. Initial assumption testing showed no serious violations of normality, linearity, outliers, and the homogeneity of the covariance matrices. There was no significant difference between diving-related or nondiving-related imagery found on the combined dependent variables ($F[2,39] = 1.10, p = 0.344$, Wilks' $\Lambda = 0.95, \eta^2 = 0.05$). However, there was a significant difference found between the divers group and the nondivers group ($F[2,39] = 13.52$, $p = 0.001$, Wilks' $\Lambda = 0.60$, $\eta^2 = 0.41$). Finally, there was no significant interaction at the multivariate level between imagery and diving experience ($F[2,39] = 2.69, p = 0.76$, Wilks' $\Lambda = 0.98$, $\eta^2 = 0.01$).

A further univariate analysis (ANOVA) was undertaken in order to establish the effect of diver experience upon each dependent measure separately. This revealed that there was a significant difference

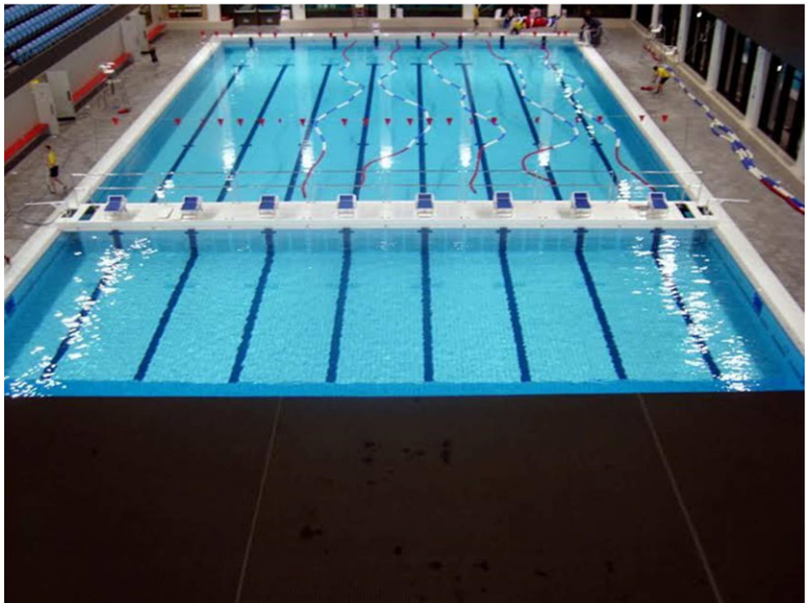

Fig. 2. The neutral (tennis) and dive risk images (10-m platform).

in risk perception by experience (F[1,42] = 5.19, p = 0.028, η^2 = 0.11), with divers perceiving less risk (M = 35.02, SD = 7.97) than nondivers (M = 39.93, SD = 6.20). There was also a significant difference in preference for regulation by diving experience (F[1,42] = 26.40, p = 0.001, η^2 = 0.38), with divers preferring more dive forms to be permitted (M = 3.95, SD = 1.21) compared with nondivers (M = 2.09, SD = 1.19). Finally, a one-way ANOVA revealed a significant (F[2,63] = 11.29, p = 0.001) difference in regulation scores such that divers (M = 3.95, SD = 1.12) prefer almost two more dives be permitted than novices (M = 2.09, SD = 1.19) or than are actually permitted in practice (using the manager regulation scores from Study 1; M = 2.40, SD = 1.72). A post hoc Scheffe test has shown that diver scores differed significantly (p<0.05) from both the novice and pool practice scores, and that the latter two did not differ significantly from each other.

Table III. Descriptive Statistics for Risk Perception and Regulation by Diver and Imagery

		Divers			Nondivers			
		Mean	*SD*	*N*	Mean	*SD*	*N*	Total Mean
Diving	Risk perception	35.27	10.39	11	41.31	5.41	11	38.29
Image	Regulation	4.27	1.10	11	2.18	1.16	11	3.22
Neutral	Risk perception	34.77	5.02	11	38.54	6.87	11	36.65
Image	Regulation	3.63	1.28	11	2.00	1.26	11	2.81
Total risk perception		35.02*	7.97	22	39.93*	6.20	22	37.47
Total regulation preference		3.95***	1.21	22	2.09***	1.19	22	3.02

*$p<0.05$; ***$p<0.001$.

3.3. Discussion

The results of Study 2 show that experience of diving is related to differences in the perception of risk, both within the sport of diving specifically, and in recreation more generally, and that this group also believes a greater number of dive forms are acceptable in public sessions than novices, or than is in fact currently allowed in practice. Of course, it is possible that those drawn to diving have an existing higher tolerance of risk, and that this disposition also explains their more liberal stance on diving regulation (there was a low to moderate correlation between risk perceptions and regulation scores, $r = 0.34$, $p = 0.023$). Similarly, nondiver risk judgments may be conflated by the sort of cognitive biases outlined in the introduction, and it could be that the diver sample is simply more realistic with respect to the relatively modest risks involved whilst also appreciating the advantages of allowing the full use of boards. Indeed, there was no significant difference between actual regulation as reported by managers (who are presumably closer matched to novices than divers) and the preferences expressed by novices for regulation, although the former may have concerns regarding potential liability irrespective of personal experience or risk preference.[18] Notwithstanding difficulties identifying causal direction, it remains the case that the experience of diving has not engendered more caution, quite the opposite.

4. GENERAL DISCUSSION

This study is probably unique in examining whether different levels of regulation concerning permitted dive forms that are employed in pools offering diving facilities to the public affects recorded incidents of dive-related injuries. In terms of this albeit modest sample, the answer is that these do not. In line with many of the points made in the introduction, restricting the number of dive forms allowed in public sessions did not yield a safety dividend. Indeed, it is not impossible that excessive regulation may in fact cause harm in terms of participation, skill progression, and encouraging swimming generally, which has safety benefits beyond the controlled pool locations.[5–11] It may be that pool regulation is selected on the basis of what is intuitively thought of as dangerous, rather than what is in fact a danger, with risk appraisal informed by a lack of direct experience and possibly substituted with thinking heuristics.[36,37,41,47] For example, it might seem as if a backward launch has more risk than a front takeoff because (not unreasonably) it is noted that aquatic obstructions cannot be seen at the start of the dive. Yet, flight injury accounts for 30% of cases recorded by Day *et al.*,[14] and these typically involve impact with the board, which unlike the water can be better seen at elevation and during basic inward flights from backward facing launches. The advantage of the findings here is that they are a first step towards going beyond *a-priori* intuitions of risk with the physically complex sport of diving.

It was argued in the introduction that individual participants in sports, not least diving, may well adjust their behavior according to the risks as they perceive them. The diver has the capacity to both exercise caution in terms of the dive attempt selected, and once selected be careful as to its execution, such that he or she remains reasonably within the diver's "comfort zone" in terms of acceptable risk.[43,44] In essence, though diving is clearly visually dramatic and doubtless an exciting sport to participate in, this alone should not be taken to mean that those engaged in it do not flexibly adjust their behavior in light of experience, skill

level, and the risks and benefits associated with attempting specific dives. Limiting more elaborate appearing dive forms during public sessions was not related to reductions in reported injuries, which offers some support for a "thermostat" model of dive selection.

Another clear finding was that experienced divers do perceive less risk in a range of recreational activities, including diving, when compared with others. They also prefer almost two more dive forms be allowed than is currently so in public pools when compared with novices. There was also a modest correlation found between risk perception scores and regulation preference ($r = 0.34$, $p = 0.023$). Although there are inevitable issues regarding causation, the pattern of findings supports key elements of the model presented in Fig. 1, i.e., that experience with diving may inform risk appraisal and the subsequent acceptability of certain dive forms. Notice also that the similarity between novice preferred regulation and that which is extant in pools may be explained through different routes, with managers having additional liability concerns whether or not diving injuries occur. The wider benefits of permitting maximum use of boards may not be uppermost in the minds of managers or poolside staff when developing or applying local policy.

It is not impossible that these findings are an artifact of the five dive forms selected for test and that others unmeasured, yet also regulated, would present a problem. This seems implausible. The regulation list only misses handstand launches as a take-off position, and after somersaults (rotations in any direction) and twists, there is little more that can be listed outside of naming specific dives (e.g., a 105C, a forward facing two and a half somersaults tucked would not be permitted, whereas a one and a half 103C, would be acceptable). Given how many dive permutations are possible, it seems impractical to regulate at this level of detail anyway. It might also be argued that there could be a nonresponse bias in Study 1.[55] With a pool reply rate of 20% it may be that only those with a permissive regulation stance replied when they had a good safety record, whereas defending a safety record is less problematic for those with more restrictive policies. Response rates typically between 30% and 10% are not uncommon for postal survey methods,[56,57] and the response here is in line with this, but given there was no follow up of nonresponders it is not possible to resolve the extent to which this may have influenced results. Future work might attempt different recruitment approaches, such as using a freedom of information request as a follow up, and ensuring that some independent check may be made on the manager responses (because they may not be as familiar with poolside regulation and practice as other staff). Such work might also check the frequency of board use in sample locations, rather than rely exclusively on visitor frequency and pool/board opening times, which although convenient, are an imperfect measure of exposure to risk.

The findings here are a first and small step in an area popularly associated with risk, yet significantly underresearched. It would be premature to suggest that individual swimming pools might revise regulations for public diving from this alone. However, some of the more blatant inconsistencies might give pause for thought. Nevertheless, these data provide no basis for believing that the most restrictive of policies are any more effective in terms of safety than the most permissive in this area. Theory discussed in the introduction offers a plausible account for why this might be so, with facility users likely exercising some intrinsic regulation whatever the extrinsic policy framework. An individual's previous experience was seen as informing an individual's risk appraisal and may affect subsequent dive selection.[41] The sport may be visually breathtaking at the elite level, and merely a fun spectacle otherwise, but this ought to not mislead observers and managers into overestimating risk and overregulating board use. Of course, it is difficult, perhaps even unfair, to expect poolside staff to make assessments regarding user experience. However, obvious examples of inexperience would no doubt present themselves within either a permissive or restrictive policy framework, and currently divers would not sensibly be permitted to continue if their activities appeared reckless under any regime. The evidence presented here simply suggests that such assessment continue, but that the actual dive form undertaken may be of less importance as far as risk of injury is concerned than has previously been imagined. This is because restricting variations in dive form does not appear to have an impact upon past injury incident rates.

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